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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/899,784	07/05/2001	Dong-Su Kim	5000-1-212	2355

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CHA & REITER
411 HACKENSACK AVE, 9TH FLOOR
HACKENSACK, NJ 07601

EXAMINER

TOLEDO, FERNANDO L

ART UNIT PAPER NUMBER

2823

DATE MAILED: 05/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Am

Office Action Summary	Application No.	Applicant(s)	
	09/899,784	KIM, DONG-SU	
	Examiner	Art Unit	
	Fernando Toledo	2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-7,9,10,12-17,19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-7,9,10 and 12-17 is/are rejected.
- 7) ☒ Claim(s) 19 and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9. 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 19 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3, 4, 6, 7, 9, 10, 12, 13, 15 – 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan et al. (U. S. patent 6,306,706 B1) in view of Barnes et al. (U. S. patent 5,284,549).

In re claims 1 and 10, Chan, in the U. S. patent 6,306,706 B1; figures 1 – 5 and related text, discloses selectively depositing an etch stop layer P1 on an etching area of a first silica layer formed on a semiconductor substrate (figure 5c); forming a second silica layer on the surface of the etch stop layer and the first silica layer (figure 5d); forming a mask patterned according to the shape of the etching area on the surface of the second silica layer (figure 5e); removing the second silica layer from the etching

area using the mask by dry etching (figure 5e); removing the etch stop layer by wet etching (figure 5e).

Chan does not show wherein the etch stop layer is one of gold, platinum or alumina.

However, Barnes in the U. S. patent 5,284,549 discloses wherein a ceramic layer (Al_2O_3) has a high etching ratio compared to SiO_2 (desirable ratio of 20:1) (column 3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the etch stop layer of Chan with a ceramic material since, as taught by Barnes, it poses a high etching ratio compared to silica (ratio of 20:1).

4. In re claims 3 and 12, Chan discloses forming the etch stop layer on the first silica layer; forming a photoresist layer on the etch stop layer; patterning the photoresist layer according to the shape of the etching area; and dry-etching the etch stop layer using the photoresist pattern (figures 5b and 5c).

5. In re claims 4 and 13, Chan does not disclose wherein the etch stop layer is formed of one of metal and ceramic.

However, Barnes discloses wherein a ceramic layer (Al_2O_3) has a high etching ratio compared to SiO_2 (desirable ratio of 20:1) (column 3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the etch stop layer of Chan with a ceramic material since, as taught by Barnes, it poses a high etching ratio compared to silica (ratio of 20:1).

6. In re claims 6 and 15, Chan discloses wherein the first and second silica layers are formed by deposition (figure 5).

7. In re claims 7 and 16, Chan does not disclose wherein the second silica layer is etched by RIE.

However Barnes discloses that RIE etching has a high selectivity to silica (column 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to etch the second silica layer by RIE in the invention of Chan, since as taught by Barnes, RIE has a high selectivity to silica.

8. In re claim 9, Chan discloses wherein the second layer is removed according to a predetermined vertical profile (figure 5).

9. In re claim 17, Chan discloses wherein the second silica layer is removed according to a predetermined vertical profile (figure 5).

10. Claims 5 and 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chan in view of Young et al. (U. S. patent 6,268,287 B1).

Chan discloses forming a poly-silicon layer on the second silica layer by sputtering; forming a photoresist layer on the poly layer; patterning the photoresist layer according to the shape of the etching area; and etching the poly layer using a photoresist pattern (figure 5).

Chan does not disclose wherein the mask layer is a metal layer.

However Young discloses that a mask layer formed with a metal layer will prevent forming a polymer on the layer underneath the hard mask since it does not interact with the photoresist (abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the mask layer of Chan with metal, since, as taught by Young, it will prevent formation of a polymer on the layer underneath the hard mask since it does not interact with the photoresist.

Response to Arguments

11. Applicant's arguments filed 5 May 2003 have been fully considered but they are not persuasive for the foregoing reasons.

Applicant contests that the structure of Chan is a silicon microstructure while the structure in Applicant's invention is a silica microstructure.

12. In response to applicant's arguments, the recitation silica microstructure has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

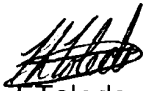
Conclusion

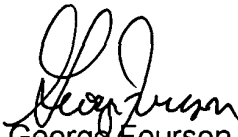
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fernando Toledo whose telephone number is 703-305-0567. The examiner can normally be reached on Mon-Fri 8am to 4pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7382 for regular communications and 703-308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


F. Toledo
May 14, 2003


George Fourson
Primary Examiner
Art Unit 2823